REMARKS

Claims 1-6, 8-16, 18-26, 29-41, 43-48, 51-58, 60-68 and 71-78 are pending, with claims 1, 9, 12, 19, 22, 30, 34, 43, 45, 52, 53, 61, 64 and 72 being independent. Reconsideration and allowance of the above-referenced application are respectfully requested.

Rejections Under 35 U.S.C. §§ 102 & 103

Claims 1, 2, 9-12, 19-24, 26, 30-35, 43-46, 52-54, 68 and 72-78 stand rejected under 35 U.S.C. §102(e) as allegedly being anticipated by U.S. Patent No. 7,136,244 issued to Rothberg. (hereinafter "Rothberg"). Claims 3-6, 8, 13-16, 18, 25, 29, 36-41, 47, 48, 51, 55-58, 60, 67 and 71 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Rothberg as applied to claim 1 above and further in view of U.S. Patent No. 6,519,715 issued to Takashi et al. (hereinafter "Takashi"). These contentions are respectfully traversed.

Independent claim 1 recites, among other things, "an error correction circuit responsive to the detector and the averaging circuit to provide a signal quality metric that governs **which signals are averaged**." (Emphasis added.) For example, as described in the present specification:

> [0024] A quality monitor can be used to measure signal quality for use in reading the data. The quality measure can be based on a defined signal characteristic. **Averaging can be based on the quality measure, such as by excluding a read signal with a low quality measure** from the averaging, or such as by performing weighted averaging, where the weights are given by the quality measure. [...]
> [0038] **The signals that are averaged can vary.** [...] **obtained signals can be excluded from the averaging based on a signal quality metric**[.]

(*See* Specification at ¶s 24 and 38; emphasis added.)

The Office now relies on Rothberg for this claimed subject matter, referring to FIG. 4 and col. 4, lines 27-58 in Rothberg. (*See* 11-08-2007 Office Action at pages 2 and 4.) However, Rothberg fails to describe the claimed subject matter. Rothberg makes clear that each new signal is averaged into a running average of all previous signals from the same data sector:

> The binary bits 26 detected during the read operation are averaged with the binary bits stored in the buffer 10 to generate averaged binary bits. The disk controller 12 processes the averaged binary bits stored in the buffer 10 in an attempt to recover the data sector. If the data sector is still unrecoverable, another retry operation is executed and the detected binary bits 26 are averaged with the binary bits stored in the buffer 10. **This process is reiterated until the data sector is recovered, or the data sector is deemed unrecoverable after a predetermined number of retries.**

(*See* Rothberg at col. 3, lines 57-67; emphasis added.) Moreover, the cited portion of Rothberg (FIG. 4 and col. 4, lines 27-58) describes generating a reliability metric for each ECC (error correction code) symbol relative to the weighted outcome of the averaging:

> In one embodiment, the averaged values used to assign the binary value to each averaged binary bit is also used to generate **an erasure pointer for increasing the number of errors corrected by the error correction code 30**. This is illustrated in FIG. 4 which shows a reliability metric generated for each bit in the estimated data sequence 34. **The reliability metric in this embodiment is computed as the averaged value if assigned a "1" bit, and computed as one minus the average value if assigned a "0" bit.** The first averaged binary bit 36.sub.0 is assigned a "1" bit so a reliability metric of 3/5 or 0.6 is assigned to the first averaged binary bit 36.sub.0. The second averaged binary bit 36.sub.1 is

> assigned a "0" bit so a reliability metric of 1-1/5 or 0.8 is assigned to the second averaged binary bit 36.sub.1. The remainder of the averaged binary bits 36.sub.2 36.sub.N are assigned a reliability metric in a similar manner. **In the example of FIG. 4, the ECC symbols comprise three bits each, and the reliability metrics generated for each bit in a symbol are combined to generate the erasure pointers. In the example of FIG. 4, the reliability metrics are added and the result compared to a threshold. If the result is less than or equal to a threshold, then an erasure pointer is generated for the symbol.** The combined metrics for the first symbol is 2.4 which is greater than 1.5 and therefore no erasure pointer is generated. The combined metrics for the last symbol is 1.4 which is less than 1.5 and therefore an erasure pointer is generated. Any suitable error correction code may be employed, such as a Reed-Solomon error correction code. Using erasure pointers to augment [...] an error correction code, such as a Reed-Solomon error correction code, is well known, the details of which are not disclosed so as not to obscure the embodiments of the present invention.

(*See* Rothberg at col. 4, lines 27-58; emphasis added.) Nothing here teaches or suggests at least an error correction circuit responsive to the detector and the averaging circuit to provide a signal quality metric **that governs which signals are averaged**. To the contrary, the signals to be averaged are already known when Rothberg's reliability metric is generated, and this reliability metric does not affect which signals are averaged together in Rothberg.

Takashi fails to cure the defects of Rothberg for at least the reasons addressed in the Response filed 08/20/2007, which is hereby incorporated by reference. Thus, independent claim 1 should be in condition for allowance. Dependent claims 2-6, 8 and 11 should be allowable based at least on their dependence from an allowable base claim.

Independent claim 12 should be allowable for at least similar reasons. Claim 12 recites, among other things, "an error correction circuit responsive to the detector and the averaging circuit to provide **a signal quality metric that governs which read signals are averaged**." (Emphasis added.) The Office relies on Rothberg for this claimed subject matter, referring to the rejection of claim 1 when rejecting claim 12. (*See* 11-08-2007 Office Action at page 5.) Thus, for at least the reasons addressed above, Rothberg fails to teach or suggest an error correction circuit responsive to the detector and the averaging circuit to provide a signal quality metric that governs **which read signals** are averaged, and independent claim 12 should be in condition for allowance. Dependent claims 13-16, 18 and 21 should be allowable based at least on their dependence from an allowable base claim.

Independent claim 22 should also be allowable for at least reasons similar to claim 1. Claim 22 recites, among other things, "wherein interpreting the input signal comprises using maximum likelihood detection and error correction to provide the discrete values and **a signal quality metric**, the method further comprising **excluding the input signal from the multiple signals to be averaged based on the signal quality metric**." (Emphasis added.) The Office relies on Rothberg and the rejection of claim 1, for this claimed subject matter, referring to the rejection of claim 1 when rejecting claim 22. (*See* 11-08-2007 Office Action at page 5.) The specific language of claim 22 ("excluding the input signal from the multiple signals to be averaged based on the signal quality metric") has not been addressed by the Office (*see e.g.*, 11-08-2007 Office Action at page 6), and for at least reasons similar to those addressed above, neither Rothberg nor Takashi teaches or suggests excluding the input signal from the multiple

signals to be averaged based on a signal quality metric. Thus, independent claim 22 should be in condition for allowance. Dependent claims 23-26, 29 and 33 should be allowable based at least on their dependence from an allowable base claim.

Independent claim 34 should also be allowable for at least reasons similar to claim 1. Claim 34 recites, among other things, "wherein the means for reading further includes error-detection means for **controlling which read signals are averaged**." (Emphasis added.) The Office relies on Rothberg, and the rejection of claims 1 and 22, for this claimed subject matter. (*See* 11-08-2007 Office Action at pages 5 and 7.) Thus, the remarks above with respect to Takashi and Rothberg are applicable to claim 34 as well, and independent claim 34 should be in condition for allowance. Dependent claims 35-41 should be allowable based at least on their dependence from an allowable base claim.

Independent claim 45 should also be allowable for at least similar reasons. Claim 45 recites, among other things, "wherein the means for interpreting comprises maximum likelihood detection and error correction means for providing the discrete values and **a signal quality metric used to exclude an input signal from averaging**." (Emphasis added.) The Office relies on Rothberg, and the rejection of claims 1 and 22, for this claimed subject matter. (*See* 11-08-2007 Office Action at pages 5 and 7.) For at least reasons similar to those addressed above, neither Rothberg nor Takashi teaches or suggests a signal quality metric used to exclude an input signal from averaging. Thus, independent claim 45 should be in condition for allowance. Dependent claims 46-48, 51 and 78 should be allowable based at least on their dependence from an allowable base claim.

Independent claim 53 should also be allowable for at least reasons similar to claim 1. Claim 53 recites, among other things, "means for providing a signal quality metric that **governs which signals are averaged**." (Emphasis added.) The Office relies on Rothberg and the rejection of claim 1, for this claimed subject matter, referring to the rejection of claim 1 when rejecting claim 53. (*See* 11-08-2007 Office Action at page 5.) Thus, the remarks above with respect to Takashi and Rothberg are applicable to claim 53 as well, and independent claim 53 should be in condition for allowance. Dependent claims 54-58, 60 and 63 should be allowable based at least on their dependence from an allowable base claim.

Independent claim 64 should also be allowable for at least reasons similar to claim 45. Claim 64 recites, among other things, "wherein interpreting the input signal comprises using maximum likelihood detection and error correction to provide the discrete values and a signal quality metric, and the operations further comprise **excluding the input signal from the multiple signals to be averaged based on the signal quality metric**." (Emphasis added.) The Office relies on Rothberg, and the rejection of claims 1 and 22, for this claimed subject matter. (*See* 11-08-2007 Office Action at pages 5 and 7.) For at least reasons similar to those addressed above, neither Rothberg nor Takashi teaches or suggests excluding the input signal from the multiple signals to be averaged based on the signal quality metric. Thus, independent claim 64 should be in condition for allowance. Dependent claims 65-68, 71 and 75 should be allowable based at least on their dependence from an allowable base claim.

Claims 9, 19, 30, 43, 52, 61 and 72 stand rejected under 35 U.S.C. 102(e) in view of Rothberg. However, the Office fails to provide any rationale for the rejection of these claims,

but rather states that these claims "are rejected for the same reasons as per claim 1." (*See* 11-08-2007 Office Action at page 5.) However, attention is called to the fact that these claims recite subject matter not found in claim 1. For example, the subject matter of claim 9 includes, "wherein the control circuit determines whether the discrete values are adequately indicated **based on comparison of interpretations of the new averaged signal and the current signal**." (Emphasis added.) For example, as described in the Specification:

> [0023] Determining whether the discrete values are adequately indicated can involve **comparing interpretations of the averaged read signal and a current read signal**. [...]
>
> [0039] Determining whether the discrete values are adequately indicated based on the averaged signal can involve different types of comparisons. The averaged signal can be interpreted directly, and the determination can be based solely on the interpreted averaged signal. Alternatively, the determination can involve a **comparison of interpretations of the averaged signal and of the current signal**.

(*See* Specification at ¶s 23 and 39; emphasis added.) Rothberg fails to teach or suggest this subject matter, as recited in independent claims 9, 19, 30, 43, 52, 61 and 72.

Moreover, it is respectfully submitted that the current rejection of these claims violates 35 U.S.C. Section 132 and is, thus, improper because the explanation the Examiner provides lacks sufficient specificity. 35 U.S.C. Section 132 provides, in relevant part, that "whenever, on examination, any claim for a patent is rejected, or any objection or requirement made, the Commissioner shall notify the applicant thereof, stating the reasons for such rejection, or objection or requirement, together with such information and references as may be useful in

judging of the propriety of continuing the prosecution of his application." A claim rejection violates 35 U.S.C. § 132 if it "is so uninformative that it prevents the applicant from recognizing and seeking to counter the grounds for rejection." Chester v. Miller, 906 F.2d 1574, 1578, 15 USPQ2d 1333, 1337 (Fed. Cir. 1990). This is the case here since no specifics are provided in support of the rejection, and the arguments presented in the Response filed 08/20/2007 have not been addressed by the Office.

Examiner Rizk is thanked for the telephone interview, which was conducted with Mr. Hunter, on February 5, 2008. During the interview, claims 1 and 9, and the differences in scope thereof, were discussed. Examiner Rizk asked Mr. Hunter to note the unconsidered language of claim 9 and to state that "the rejection is invalid." Based on this, and since 35 U.S.C. § 132 and 37 C.F.R. § 1.104(2) both require that the reasons for any adverse action be stated in an Office Action, the rejection is facially deficient, and withdrawal of the rejection is therefore respectfully requested. It is respectfully requested that the reasons for the rejection of any claim, including claims 9, 19, 30, 43, 52, 61 and 72, be set forth so that one may judge the propriety of continuing prosecution. Moreover, the failure of the Office to comply with these statutory and regulatory requirements could potentially prevent the entry of an amendment, argument, and/or evidence prior to the close of prosecution in this application.

As noted in the Response filed 08/20/2007, Rothberg teaches assessing a read error based on the original signal **or** a later averaged signal. Rothberg fails to teach or suggest a control circuit that "determines whether the discrete values are adequately indicated based on comparison of interpretations of the new averaged signal and the current signal." Thus, each of

independent claims 9, 19, 30, 43, 52, 61 and 72 should be in condition for allowance for at least this reason. Dependent claims 10, 20, 31, 32, 44, 62, 73, 74, 76 and 77 should be allowable based at least on their dependence from an allowable base claim.

CONCLUSION

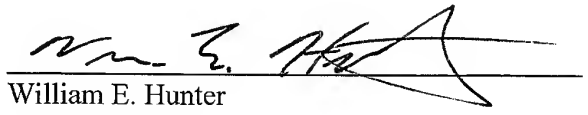
The foregoing comments made with respect to the positions taken by the Examiner are not to be construed as acquiescence with other positions of the Examiner that have not been explicitly contested. Accordingly, the above arguments for patentability of a claim should not be construed as implying that there are not other valid reasons for patentability of that claim or other claims.

In view of the remarks herein, claims 1-6, 8-16, 18-26, 29-41, 43-48, 51-58, 60-68 and 71-78 should be in condition for allowance. A formal notice of allowance is respectfully requested.

Please apply any necessary charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: Feb. 7, 2008



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